

**LISTING OF THE CLAIMS**

1. (currently amended) A microheater for microfluidic devices comprising ~~a~~ at least one microchannel formed on a substrate and further comprising a conductor disposed in said microchannel.
2. (original) A microheater according to claim 1 said conductor selected from the group consisting of metal, metal alloys, composites of organic conducting polymers and metals and organic conducting polymers; and implanted ions.
3. (original) A microheater according to claim 2 said conductor comprising an aluminum alloy comprising 99% aluminum and silicon and copper.
4. (original) A microheater according to claim 2 said conductor comprising implanted boron ions.
5. (original) A microheater according to claim 1 said substrate comprising a wafer.
6. (original) A microheater according to claim 1 said substrate comprising quartz.
7. (original) A microheater according to claim 1 said substrate comprising borosilicate glass.
8. (original) A microheater according to claim 1 said substrate comprising an oriented, boron doped, single side polished silicon wafer.
9. (original) A microheater according to claim 1 further comprising a glass layer disposed on said conductor.
10. (currently amended) A microfluidic device comprising ~~a~~ at least one microchannel, said microchannel further comprising a microheater, said microheater comprising a conductor layer formed in said microchannel.
11. (original) The device according to claim 10 said conductor selected from the group consisting of metal, metal alloys, composites of organic conducting polymers and metals and organic conducting polymers; and implantated ions.
12. (original) The device according to claim 10 said microchannel comprising a channel formed on a substrate said substrate selected from the group consisting of quartz and borosilicate wafers.

13. (original) A microheater according to claim 10 further comprising a glass layer disposed on said conductor layer.

14. (currently amended) A method for fabricating a microheater for a microfluidic device comprising the steps of:

providing a substrate;

patterning said substrate;

forming at least one microchannel in said substrate; and

forming a conductor in said microchannel.

15. (original) The method according to claim 14, said step of forming said channel comprising etching said substrate.

16. (original) The method according to claim 14, said step of forming said conductor comprising ion implantation.

17. (original) The method according to claim 16, said ion implantation step comprising implanting in said channel boron.

18. (original) The method according to claim 14, said step of forming said conductor comprising forming a metal, metal alloy, organic conducting polymer or polymer-metal composite in said channel.

19. (original) The method according to claim 14 said step of forming said conductor comprising sputtering aluminum or an alloy thereof in said channel.

20. (original) The method according to claim 14 comprising the further step of applying a layer of glass over said conductor.